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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/537,493	06/03/2005	Hiroshi Horiuchi	Q88366	4639

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2100 PENNSYLVANIA AVE. NW
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EXAMINER	
BADR, HAMID R	

ART UNIT	PAPER NUMBER
1794	

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08/31/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/537,493	HORIUCHI ET AL.	
	Examiner	Art Unit	
	HAMID R. BADR	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *RCE, 6/17/2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5,6 and 8-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,6 and 8-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/17/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/17/2009 has been entered.

1. Claims 5-6, and 8-12 are being considered on the merits.

Note: The Declaration under 37 C.F.R. 1.132, by Mr. Hiroshi Horiuchi, has been reviewed and considered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 5-6 and 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castberg et al. (US 5,453,256; hereinafter R1) in view of Kamiya (EP 1 082 907; hereinafter R2).

3. R1 discloses a method of converting pasteurized milk into fermented milk in which the pasteurized milk is carbonated with carbon dioxide and inoculated with starter culture. (Abstract).

4. R1 discloses that while the conventional yoghurt process employs 43C as the incubation temperature; an incubation temperature of 30C may be employed (Col. 3, lines 14-17).

5. R1 discloses the advantage of the invention as shortening the fermentation time necessary and can thus lead to economics of the fermented milk and is particularly applicable to yoghurt production (Col. 4, lines 29-34). Therefore, the fermentation period is shorter than a fermentation period without using the inert gas as presently claimed.

6. R1 teaches using 1200 ppm of carbon dioxide which stimulates the starter culture and as a result the incubation time is reduced by 20% (Col. 5, lines 5-10). Given the effect of lowering the oxygen content of the medium on the starter culture in reducing the incubation time, the finding, by the applicant, that the "increase of the lactic acid activity could be promoted without using any additives such as fermentation promoting substances by using inert gas to reduce the dissolved oxygen concentration" (Page 5 of the instant application, lines 10-21) is known in the art.

7. R1 gives an incubation temperature of 37C while using yoghurt starter cultures (Col. 8, Example IV)

8. R1 is silent regarding the dissolved oxygen concentration and how it can be monitored by using an inert gas.

9. R2 teaches using nitrogen to reduce the dissolved oxygen in milk. R2 teaches that in milk; the dissolved oxygen is about 10 ppm and in order to reduce it to about 2 ppm; one needs to add 40-50%, by volume, of nitrogen gas to the amount of milk (page 4, p 0023). R2 discloses that reducing the dissolved oxygen in milk will reduce smell and improve taste and smoothness (Abstract and Fig. 4).

10. Regarding claims 8-9, given that R1 in combination with R2 disclose method as presently claimed, it is clear that such method would intrinsically result in fermented milk with excellent smoothness and taste as presently claimed as well as hardness as presently claimed.

11. Regarding claims 10-12; the gel strength in the final product may be measured by different means. For instance a penetrometer may be employed to test the gel strength. However, depending on the desired gel characteristics of the final fermented milk product e.g. yogurt, one of ordinary skill in the art may optimize the process for such parameters as milk solid contents, starter culture concentration, incubation temperature and duration of fermentation as well as the concentration of such compounds as gelatin or starch added at the beginning to the milk base. The parameters such as penetration angle and hardness are absolutely unusual in the art and obviously could be replaced by other more meaningful parameters for the determination of gel strength. Given that R1 in combination with R2 disclose method as presently claimed, it is clear that such method would intrinsically result in fermented milk with penetration angle and hardness as presently claimed.

12. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of R1 and adopt the teachings of R2 in using an inert gas to reduce the dissolved oxygen in the milk medium to accelerate the growth of the starter culture and hence reduce the incubation time as presently claimed. One would do so to benefit from processes which may be carried out on a continuous basis and having a shorter fermentation time, the overall economics of the process will be improved. Absent any evidence to contrary and based on the combined teachings of the cited references, there would be a reasonable expectation of success in making a fermented product using an inert gas.

2. Claims 5-6, and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castberg et al. (US 5,453,256; hereinafter R1) in view of WO-0224870 (Examiner's Translation, hereinafter R3).

13. R1 discloses a method of converting pasteurized milk into fermented milk in which the pasteurized milk is carbonated with carbon dioxide and inoculated with starter culture. (Abstract).

14. R1 discloses that while the conventional yoghurt process employs 43C as the incubation temperature; an incubation temperature of 30C may be employed (Col. 3, lines 14-17).

15. R1 discloses the advantage of the invention as shortening the fermentation time necessary and can thus lead to economics of the fermented milk and is particularly applicable to yoghurt production (Col. 4, lines 29-34). Therefore, the fermentation period is shorter than a fermentation period without using the inert gas as presently claimed.

16. R1 teaches using 1200 ppm of carbon dioxide which stimulates the starter culture and as a result the incubation time is reduced by 20% (Col. 5, lines 5-10). Given the effect of lowering the oxygen content of the medium on the starter culture in reducing the incubation time, the finding, by the applicant, that the "increase of the lactic acid activity could be promoted without using any additives such as fermentation promoting substances by using inert gas to reduce the dissolved oxygen concentration" (Page 5 of the instant application, lines 10-21) is known in the art.

17. R1 gives an incubation temperature of 37C while using yoghurt starter cultures (Col. 8, Example IV)

18. R1 is silent regarding the dissolved oxygen concentration and how it can be monitored by using an inert gas.

19. R3 discloses the process for the preparation of fermented milk. R3 discloses that one utilizes, advantageously, a gas which does not interfere in respiration or oxidation of microorganisms. This gas is chemically and biologically inert. The gas is preferably argon and particularly nitrogen or carbon dioxide. (Page 9, lines 25-30).

20. Regarding claims 8-9, given that R1 in combination with R3 disclose method as presently claimed, it is clear that such method would intrinsically result in fermented milk with excellent smoothness and taste as presently claimed as well as hardness as presently claimed.

21. Regarding claims 10-12; the gel strength in the final product may be measured by different means. For instance a penetrometer may be employed to test the gel strength. However, depending on the desired gel characteristics of the final fermented

milk product e.g. yogurt, one of ordinary skill in the art may optimize the process for such parameters as milk solid contents, starter culture concentration, incubation temperature and duration of fermentation as well as the concentration of such compounds as gelatin or starch added at the beginning to the milk base. The parameters such as penetration angle and hardness are absolutely unusual in the art and obviously could be replaced by other more meaningful parameters for the determination of gel strength. Given that R1 in combination with R3 disclose method as presently claimed, it is clear that such method would intrinsically result in fermented milk with penetration angle and hardness as presently claimed.

22. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of R1 and adopt the teachings of R3 in using an inert gas to reduce the dissolved oxygen in the milk medium to accelerate the growth of the starter culture and hence reduce the incubation time as presently claimed. One would do so to benefit from processes which may be carried out on a continuous basis and having a shorter fermentation time, the overall economics of the process will be improved. Absent any evidence to contrary and based on the combined teachings of the cited references, there would be a reasonable expectation of success in making a fermented product using an inert gas.

Response to Arguments

Regarding The Declaration

1. Mr. Hiroshi Horiuchi has executed a declaration in which yogurt fermented under the influence of an inert gas such as nitrogen is compared to a yogurt prepared while using carbon dioxide for replacement of oxygen in the medium.

Mr. Horiuchi concludes that the smoothness of the yogurt prepared with nitrogen is more excellent that the smoothness of yogurt under the influence of carbon dioxide. Furthermore, the taste of the yogurt prepared under carbon dioxide is a tartish taste due to the generation of carbonic acid.

a. It should be realized that the rejections are under Castberg et al. (US 5,453,256; hereinafter R1) in view of Kamiya (EP 1 082 907; hereinafter R2). However, Mr. Horiuchi is presenting his comparative example under R1 only.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Please note that the yogurt may have a tartish taste when prepared according to R1, however, when the carbon dioxide is replaced by nitrogen as disclosed by R2 or according to the new ground of rejection by R3, the yogurt will have the texture and taste as presently claimed.

In other words the unexpected results, as presently declared, may hold true against R1, but they will not be considered unexpected regarding R1 in view of R2 or R1 in view of R3.

Applicants state that one would not have been motivated to combine R1 with R2 and as a result applicants do not agree with the response previously presented, and reiterate arguments stated in the Amendment filed on March 23, 2009.

The response to arguments, as presented in the Advisory action, are repeated to be responsive to the reiterated arguments.

2. Applicants argue that one skilled in the art would not have been motivated to combine R1 with R2 because in R1 carbon dioxide is used to displace oxygen in pasteurized milk while in R2 the reduction of dissolved oxygen concentration is carried out on raw milk for the purpose of improving the flavor of raw milk and since the purpose and timing of using carbon dioxide in R1 and those of the reduction of dissolved oxygen concentration in R2 are different, there is no motivation.

a. The primary reference (R1) is clearly disclosing the method of creating anaerobic conditions for the fermentation of milk together with the advantages of doing so. Advantages such as reducing the fermentation time and firmness of the gel are also being presently claimed. However, attributes such as for instance taste of the product caused by carbonation which is known to people of skill in the art triggers looking for an inert gas to displace oxygen in the fermentation medium. R2 clearly teaches that nitrogen can be used to displace oxygen in the medium. Displacement of oxygen in raw milk or pasteurized milk are not very different. There may be less dissolved oxygen in pasteurized milk due to the heat treatment which in fact will help the oxygen displacement by using a gas such as nitrogen.

It should also be realized that "obviousness under 103 is not negated because the motivation to arrive at the claimed invention as disclosed by the prior art does not agree with appellant's motivation", *In re Dillon*, 16 USPQ2d 1897 (Fed. Cir. 1990), *In re Tomlinson*, 150 USPQ 623 (CCPA 1966). If nitrogen is used for a different purpose in raw milk, it does not mean that it cannot be used for other purposes including the presently claimed use of nitrogen.

3. Applicants argue that if carbon dioxide is added into the mix which contains milk, pH of the milk is lowered and protein materials contained in the milk curdle resulting in a fermented product of poor texture.

a. In order for carbon dioxide to get dissolved in milk or any aqueous solution, the pressure on the system must be increased and the temperature should be lowered. If these conditions are not met, carbon dioxide will not exist in solution to the extent to affect the pH. On the other hand the high buffering capacity existing naturally in milk will prevent lowering of pH due to carbonation (gasification). Additionally, R1 in combination with R2 will produce the presently claimed results, and R1 should not be judged on its own in an obviousness rejection.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HAMID R. BADR whose telephone number is (571)270-3455. The examiner can normally be reached on M-F, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hamid R Badr
Examiner
Art Unit 1794

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